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## SUCCESS STORY

### USAID Interventions Reduce Laboratory Turn-around Time for Faster Diagnosis of Tuberculosis

**The USAID Cure Tuberculosis Project develops systems and processes to accelerate laboratory results for fast TB diagnosis and initiation of treatment**



Photo Credit: Cure Tuberculosis

Laboratory technician at the National Reference Laboratory (NRL) receives TB samples from rayon laboratories for culture and DST.

*“[LDMIS and other interventions] improve the interaction between laboratory technicians and clinicians, increase capacity of laboratory specialists, and the quality of laboratory work. The main plus for the patient is a favorable outcome of their disease, and for public health – improvement of the overall epidemiological situation in the country,” states Saliya Turganova, Bacteriologist, lab technician in the Chui Oblast TB Center laboratory.*

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The National Tuberculosis Program (NTP) helps curb the spread of tuberculosis (TB) infection in Kyrgyzstan. Due to the high burden of drug-resistant TB (DR-TB), rapid detection of new cases is essential in order to put patients on an effective treatment regimen. When left untreated, one TB patient can infect up to 15 people in their close environment. However, when started on effective treatment, a TB patient is no longer infectious after just two weeks into treatment. Starting effective treatment as soon as possible is critical to reducing the spread of infection in the community.

Drug-resistant TB is particularly difficult to diagnose. It requires advanced tests to be conducted in specialized laboratories, often located in the capital city and regional centers. Drug susceptibility testing (DST) -- to detect how well a particular strain of TB will respond to the different TB drugs available to treat it -- uses state-of-the-art tests to determine a strain's resistance profile. This information is critical to assign an appropriate treatment regimen with an effective combination of drugs. Without this information, delays in starting treatment – or prescribing the wrong treatment – can lead to continued spread of infection, worse treatment outcomes for patients, and even increased resistance to TB drugs.

In 2017, the amount of time for receiving a diagnosis and starting effective treatment took up to 90 days. TB patients waited three months to receive their DST results, often with the wrong course of treatment prescribed in the meantime. Now, thanks to a USAID-funded initiative, the turn-around time (TAT) has decreased significantly and results can be received in as little as 5 days.

The USAID Cure Tuberculosis Project has implemented a fully electronic information system to capture and share laboratory data between laboratories that perform TB diagnostic tests and DST and health centers which prescribe TB treatment. Information is automatically uploaded in the system and linked to individual TB patient records, reducing errors in patient's data and tests results. This Laboratory Data Management Information System (LDMIS) provides clinicians with test results in real time, allowing for fast decision-making on the course and initiation of TB treatment. Laboratory technicians and clinicians who work with LDMIS confirm that this has streamlined their work processes and workload.

Nurzhamal Mamytova, the Director of the Naryn Oblast TB Center (NOTC) shares the advantages of the LDMIS from the point of view of a TB doctor who needs test results to make evidenced-based decisions: *“With the introduction of electronic information technologies, the quality of work has significantly improved: we receive tests on time,*

*“With LDMIS, the TAT for laboratory tests has definitely reduced many-fold. Plus, LDMIS allows viewing the test results of each patient for the entire period [of treatment]. Regardless of where a patient visits a facility for medical assistance or continuation of treatment, all information in the database can be accessed by a doctor, who can immediately prescribe further treatment regimens. This is probably the most important benefit for both the patient and the attending physician,” says Anara Kozhonazarova, the DR-TB coordinator from the Talas Oblast TB Center.*

*especially DST,” says Dr. Mamytova. “We no longer wait for paper-based [test results], but start treating a patient with the receipt of electronic results. LDMIS and the clinical module [e-TB Register] improved timely diagnosis and the ability to monitor treatment.”*

In addition to the LDMIS, the Cure Tuberculosis Project has helped develop other clinical information systems that record patient’s data, improved and simplified clinical processes, and developed recording and reporting forms to calculate test turn-around time. Now, this information can be monitored automatically through LDMIS. The project also helped improve the sputum transportation system, which transports patients’ biological samples to centralized laboratories for testing, by mapping facilities and developing clearer transportation routes, so that samples can be received and tested faster by laboratories.

*“In laboratory work, it is important to produce an accurate and reliable result. In recent years, the timely receipt of test results improved. LDMIS and the transportation system improved the delivery of pathological material to the NRL and the time for laboratory tests. For a patient, it’s a plus as timely results allow prompt and effective treatment,”* says Azima Jumalievna the Head of the NOTC laboratory.

For patients, this means a faster diagnosis, an earlier start of treatment, and a better chance of success in being cured. It also means being able to return to a normal social life without risking infecting families and loved ones.

USAID has been assisting the NTP with the development and implementation nationwide of advanced technology, systems, and processes that enable earlier TB detection, diagnosis, and start of treatment. These new technologies and procedures combined with modern treatment algorithms help to improve both the patients’ experience and the capacity of health care professionals when prescribing, managing, and monitoring treatment.

The LDMIS has been implemented in 100% of oblast TB laboratories and TB hospitals, and in primary health care facilities providing TB services to the population nationwide. The LDMIS has reduced the TAT three-fold for both Xpert testing and phenotypic DST (through culture), and six-fold for HAIN. The switch from paper-based referrals to LDMIS together with other USAID interventions – strengthened transportation system with reduced delivery time of patient sputum samples from health centers to central laboratories in three pilot regions of Chui, Talas, and Naryn, and the new quality management system implemented in laboratories – has reduced data and treatment errors while enabling faster diagnosis and earlier start of treatment for TB patients, thus helping to curb the spread of infection and improve the quality of TB treatment.